

REMARKS

Claims 1, 10, 11 and 12 have been amended. Amended claims 1 and 12 are supported by, for example, the specification at page 3, lines 22-23. Amended claims 10, 11 are supported by, for example, original claim 1.

It is respectfully submitted that the present amendment presents no new issues or new matter and places this case in condition for allowance. Reconsideration of the application in view of the above amendments and the following remarks is requested.

I. The Rejection of Claim 11 under 35 U.S.C. 112

Claim 11 is rejected under 35 U.S.C. 112 as being indefinite. The Examiner states that claim 11 recites that the enzymes are added together with complexing agents and/or surfactants; whereas claim 1, from which claim 11 depends, does not require more than one enzyme. Claims 10 and 11, both of which depend from claim 1 and recite the plural enzymes, have been amended to recite that enzyme is added.

For the foregoing reasons, Applicants submit that this rejection is now moot. Applicants respectfully request reconsideration and withdrawal of the rejection.

II. The Rejection of Claims 1-7, 10, 12 and 13 under 35 U.S.C. 102

Claims 1-7, 10, 12 and 13 are rejected under 35 U.S.C. 102 as being anticipated by Tanabe et al. ("On mechanism of enzymatic maceration of *bast fibers*. II. Approach from aspect of fiber components," Shikoku Kogyo Gijyutsu Shikensho Kenkyu Hokoku 15:63-88, 1988)(emphasis added). This rejection is respectfully traversed.

As the title indicates, Tanabe et al. disclose a process for treating *bast fiber pulp*. Bast fiber pulp is a non-wood fiber pulp. See, for example, Tanabe et al. at page 72, line 25-page 73, line 2. The present invention, however, is directed to a process for reducing the cationic demand and/or the content of anionic trash in a *paper making wood pulp*, the process comprising the following steps: a) an alkaline treatment of the pulp, b) a treatment of the pulp with a pectin lyase, a pectate lyase, or a combination of a pectate lyase and a pectinesterase. See, for example, amended claim 1. Therefore, Tanabe et al. do not anticipate the instant invention.

For the foregoing reasons, Applicants submit that the claims as amended overcome this rejection under 35 U.S.C. 102. Applicants respectfully request reconsideration and withdrawal of the rejection.

III. The Rejection of Claims 1-7, 10, 12 and 13 under 35 U.S.C. 102

Claims 1-7, 10, 12 and 13 are rejected under 35 U.S.C. 102 as being anticipated by Kobayashi et al. ("Approach to maceration mechanism in enzymatic pulping of *bast fibers* by alkalophilic pectinolytic enzymes produced by *Erwinia* species," Biotechnology Advances, (6):29-37, 1988)(emphasis added). This rejection is respectfully traversed.

Kobayashi et al. disclose a process for treating *bast fiber* pulp. Bast fiber pulp is a non-wood fiber pulp. The present invention, however, is directed to a process for reducing the cationic demand and/or the content of anionic trash in a *paper making wood pulp*, the process comprising the following steps: a) an alkaline treatment of the pulp, b) a treatment of the pulp with a pectin lyase, a pectate lyase, or a combination of a pectate lyase and a pectinesterase. See, for example, amended claim 1. Therefore, Kobayashi et al. do not anticipate the present invention.

For the foregoing reasons, Applicants submit that the claims overcome this rejection under 35 U.S.C. 102. Applicants respectfully request reconsideration and withdrawal of the rejection.

IV. The Rejection of Claims 1-4, 6-10 and 12-14 under 35 U.S.C. 103

Claims 1-4, 6-10 and 12-14 are rejected under 35 U.S.C. 103 as being unpatentable over Andersen et al. (US Patent No. 6,284,524) in view of Thornton ("Enzymatic degradation of polygalacturonic acids released from mechanical pulp during peroxide bleaching," Tappi Journal 77(3):161-167, 1994). This rejection is respectfully traversed.

Thornton discloses a method for the treatment of mechanical wood pulp with *pectinase* wherein the pectinase decomposes dissolved anionic pectins into galacturonic acid. Thornton neither teaches nor suggests using a pectin lyase, a pectate lyase or a combination of a pectate lyase and a pectinesterase for the treatment of a mechanical wood pulp. Thornton further teaches that it is the galacturonic acid resulting from the reaction between polygalacturonic acids and pectinase that accounts for the reduction of anionic trash. See, for example, Thornton at p. 163.

Applicants note that claim 1 has been amended to clarify the scope of the invention. The present invention involves a process for reducing the cationic demand and/or the content of anionic trash in a paper making wood pulp the process comprising the following steps: a) an alkaline treatment of the pulp, b) a treatment of the pulp with a pectin lyase, a pectate lyase, or a combination of a pectate lyase and a pectinesterase. The reaction of the enzymes disclosed in the present invention leads to the formation of unsaturated oligomers with a 4,5 carbon-carbon double bond in the non-reducing end, resulting in degradation products exhibiting a distinct UV

absorbance at 235 nm. See, for example, specification at page 2, lines 12-15; page 3, lines 20-23.

The present invention is directed to a different process with a different end product from that disclosed in Thornton. Reading Thornton, one skilled in the art would not be motivated to use a pectin lyase, a pectate lyase or a combination of a pectate lyase and a pectinesterase for reducing the cationic demand and/or the content of anionic trash in a paper making wood pulp as Thornton teaches that it is the galacturonic acid resulting from the reaction between polygalacturonic acids and pectinase that accounts for the reduction of anionic trash. See, for example, Thornton at p. 163.

Andersen et al. discloses the use of pectate lyase in the textile, detergent and cellulosic fiber industries. See col.1, lines 11-16. As noted above, the present invention is directed to a process for reducing the cationic demand and/or the content of anionic trash in a paper making wood pulp using a pectin lyase, a pectate lyase or a combination of a pectate lyase and a pectinesterase. Reading Andersen, which is directed to use of pectate lyase in the textile, detergent and cellulosic fiber industries, one skilled in the art would not be motivated to substitute the pectinase of Thornton for the pectin lyase, a pectate lyase, or a combination of a pectate lyase and a pectinesterase disclosed in the present invention to reduce the cationic demand and/or the content of anionic trash in a paper making wood pulp as Thornton teaches that it is the galacturonic acid resulting from the reaction between polygalacturonic acids and pectinase that accounts for the reduction of anionic trash, see, for example, Thornton at p. 163.

For the foregoing reasons, Applicants submit that the claims overcome this rejection under 35 U.S.C. 103. Applicants respectfully request reconsideration and withdrawal of the rejection.

V. Rejection of Claim 5 under 35 U.S.C.103

Claim 5 is rejected under 35 U.S.C. 103 as being unpatentable over Andersen et al. (US Patent No. 6,284,524) in view of Thornton ("Enzymatic degradation of polygalacturonic acids released from mechanical pulp during peroxide bleaching," Tappi Journal 77(3):161-167, 1994) and further in view of IUBMB, Web Version of Enzyme Nomenclature and Back et al. (U.S. Patent No. 5,582,681). This rejection is respectfully traversed.

As noted supra, reading Andersen in view of Thornton, one skilled in the art would not be motivated to substitute the pectinase of Thornton for the pectin lyase, a pectate lyase, or a combination of a pectate lyase and a pectinesterase disclosed in the present invention to reduce the cationic demand and/or the content of anionic trash in a paper making wood pulp because

Thornton teaches that it is the galacturonic acid resulting from the reaction between polygalacturonic acids and pectinase that accounts for the reduction of anionic trash. See section IV, supra. The reference to the IUBMB Enzyme Nomenclature is cited by the Examiner for allegedly disclosing that the pectate lyase reaction produces an unsaturated oligomer with a 4,5 carbon-carbon double bond in the non-reducing terminal sugar residue. See October 3, 2006 Final Office Action at page 8. But the Enzyme Nomenclature reference does not teach or suggest the use of pectin lyase, a pectate lyase, or a combination of a pectate lyase and a pectinesterase to reduce the cationic demand and/or the content of anionic trash in a paper making wood pulp. Back et al. also does not teach or suggest the use of pectin lyase, a pectate lyase, or a combination of a pectate lyase and a pectinesterase to reduce the cationic demand and/or the content of anionic trash in a paper making wood pulp. Therefore, Andersen in view of Thornton and further in view of the Enzyme Nomenclature and Back et al. also do not teach or suggest a process for reducing the cationic demand and/or the content of anionic trash in a paper making wood pulp, the process comprising the following steps: a) an alkaline treatment of the pulp, b) a treatment of the pulp with a pectin lyase, a pectate lyase, or a combination of a pectate lyase and a pectinesterase wherein the enzyme is added together with complexing agents and/or surfactants.

For the foregoing reasons, Applicants submit that the claims overcome this rejection under 35 U.S.C. 103. Applicants respectfully request reconsideration and withdrawal of the rejection.

VI. Rejection of Claim 11 under 35 U.S.C.

Claim 11 is rejected under 35 U.S.C. 103 as being unpatentable over Andersen et al. (US Patent No. 6,284,524) in view of Thornton ("Enzymatic degradation of polygalacturonic acids released from mechanical pulp during peroxide bleaching," Tappi Journal 77(3):161-167, 1994) and further in view of Back et al. This rejection is respectfully traversed.

As noted above, neither Andersen nor Thornton teach or suggest the present invention. Back et al. is cited by the Examiner for the proposition that adding a surfactant along with the pectinase in the method of Thornton or along with the pectate lyase of Andersen would have been obvious to one of ordinary skill in the art. However, as noted supra, neither Andersen nor Thornton teach or suggest pectin lyase, a pectate lyase, or a combination of a pectate lyase and a pectinesterase to reduce the cationic demand and/or the content of anionic trash in a paper making wood pulp. Therefore, Andersen in view of Thornton and further in view of Back et al. also do not teach or suggest a process for reducing the cationic demand and/or the content of anionic trash in a paper making wood pulp, the process comprising the following steps: a) an

alkaline treatment of the pulp, b) a treatment of the pulp with a pectin lyase, a pectate lyase, or a combination of a pectate lyase and a pectinesterase wherein the enzyme is added together with complexing agents and/or surfactants.

For the foregoing reasons, Applicants submit that the claims overcome this rejection under 35 U.S.C. 103. Applicants respectfully request reconsideration and withdrawal of the rejection.

VI. Rejection of Claims 1-14 for Double Patenting

Claims 1-14 are rejected under the judicially created doctrine of double patenting as being unpatentable over claims 1-5 of U.S. Patent No. 6,284,524 ("Andersen et al. I"), or claims 20 and 21 of U.S. Patent No. 6,187,580 ("Andersen et al. II"), or claims 21, 23 and 24 of U.S. Patent No. 6,399,351 (Bjornvad et al.) in view of Thornton.

Obviousness double patenting is a judicially created doctrine grounded in public policy rather than statute. *In re Longi*, 225 U.S.P.Q. 645, 648 (Fed. Cir. 1985). The purpose of this rejection is to prevent the extension of the term of a patent by prohibiting the issuance of the claims in a second patent not patentably distinct from the claims of the first patent. *Id.* The Federal Circuit has indicated that the issue in determining whether a an obviousness double patenting rejection is appropriate is "whether the claimed invention in the application for the second patent would have been obvious from the subject matter of the claims in the first patent, in light of the prior art." *Id.*

Andersen I merely claim a method for degradation or modification of plant material with a pectate lyase, wherein the plant material wherein the plant material is recycled waste paper, mechanical paper-making pulps or fibres subjected to a retting process. See, for example, claims 4, 5. Reading the claimed subject matter of Andersen I in view of Thornton, one skilled in the art would not be motivated to substitute the pectinase of Thornton for the pectin lyase, a pectate lyase, or a combination of a pectate lyase and a pectinesterase claimed in the present invention to reduce the cationic demand and/or the content of anionic trash in a paper making wood pulp, since Thornton teaches that it is the galacturonic acid resulting from the reaction between polygalacturonic acids and pectinase that accounts for the reduction of anionic trash, see, for example, Thornton at p. 163. See, for example, specification at page 2, lines 12-15; page 3, lines 20-23.

Similarly, Andersen II merely claim the use of pectate lyase for the degradation of modification of a plant material, wherein the plant material is recycled waste paper, mechanical paper-making pulps or fibres subjected to a retting process. See, for example, claims 20, 21.

Reading the claimed subject matter of Andersen II, in view of Thornton, one skilled in the art would not be motivated to substitute the pectinase of Thornton for the pectin lyase, a pectate lyase, or a combination of a pectate lyase and a pectinesterase claimed in the present invention in order to reduce the cationic demand and/or the content of anionic trash in a paper making wood pulp, as Thornton teaches that it is the galacturonic acid resulting from the reaction between polygalacturonic acids and pectinase that accounts for the reduction of anionic trash, see, for example, Thornton at p. 163. See, for example, specification at page 2, lines 12-15; page 3, lines 20-23.

Bjomad et al., like Andersen I and II, merely claim the use of pectate lyase for the degradation or modification of a plant material, wherein the plant material is recycled waste paper, mechanical paper-making pulps or fibres subjected to a retting process. See claims 23, 24. Reading the claimed subject matter of Bjomad et al. in view of Thornton one skilled in the art would not be motivated to substitute the pectinase of Thornton for the pectin lyase, a pectate lyase, or a combination of a pectate lyase and a pectinesterase claimed in the present invention in order to reduce the cationic demand and/or the content of anionic trash in a paper making wood pulp, as Thornton teaches that it is the galacturonic acid resulting from the reaction between polygalacturonic acids and pectinase that accounts for the reduction of anionic trash, see, for example, Thornton at p. 163. See, for example, specification at page 2, lines 12-15; page 3, lines 20-23.

For the foregoing reasons, Applicants submit that the claims overcome this rejection under the judicially created doctrine of obviousness double patenting. Applicants respectfully request reconsideration and withdrawal of the rejection.

VII. Conclusion

In view of the above, it is respectfully submitted that all claims are in condition for allowance. Early action to that end is respectfully requested. The Examiner is hereby invited to contact the undersigned by telephone if there are any questions concerning this amendment or application.

Respectfully submitted,



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